

LISTING OF THE CLAIMS

1-20. (Canceled)

21. (Currently Amended) An apparatus for converting an organic liquor into carbon solids and a mixture of hydrocarbons, comprising:

a heater configured to receive and heat the organic liquor to produce a mixture of liquid and vaporized oil, said heater having an outlet;

a reactor comprising a vessel having an inlet and first and second outlets wherein said inlet communicates with the heater outlet, said reactor configured to receive and convert the mixture of liquid and vaporized oil into carbon solids and a mixture of hydrocarbon vapors and gases;

a first cooler having an inlet and an outlet, said inlet communicating with the first reactor outlet for accepting the carbon solids, the first cooler being configured for containing and cooling the carbon solids accepted from the reactor; ~~and~~

a second cooler having an inlet and an outlet, said inlet communicating with the second reactor outlet for accepting the mixture of hydrocarbon vapors and gases; and

a particulate separator disposed between the second reactor outlet and second cooler inlet, wherein said particulate separator returns entrained particulate from the mixture of hydrocarbon gases and vapors to the reactor.

22. (Previously Presented) The apparatus of claim 21, wherein said reactor is an auger.

23. (Previously Presented) The apparatus of claim 21, wherein said heater comprises a separate vessel defining a chamber and one or more tubes in the chamber to promote efficient heat exchange.

24. (Previously Presented) The apparatus of claim 21, wherein said first cooler is an auger.

25. (Previously Presented) The apparatus of claim 21, further comprising a storage system having an inlet communicating with the first cooler outlet for accepting the carbon solids from the first cooler.

26. (Previously Presented) The apparatus of claim 21, further comprising one or more preheaters in flow communication with the heater for heating the organic liquor prior to transfer of the organic liquor to the heater.

27. (Previously Presented) The apparatus of claim 21, further comprising an air lock disposed between the first reactor outlet and the first cooler inlet.
28. (Previously Presented) The apparatus of claim 27, further comprising an air lock disposed at the first cooler outlet .
29. (Previously Presented) The apparatus of claim 21, further comprising a steam source communicating with the heater for mixing with the organic liquor.
- 30-31. (Canceled)
32. (Currently Amended) An apparatus comprising:
- a heated vessel having an inlet and an outlet;
 - a first, heated auger having an inlet and an outlet, said inlet and outlet being configured and dimensioned to permit higher pressure to be applied in said first auger, said first auger inlet communicating with the vessel outlet;
 - a second, cooled auger having an inlet in communication with said first, heated auger outlet, said second auger providing for cooling of solids received from the first, heated auger; ~~and~~
 - a condenser in communication with the with the first, heated auger outlet to receive vapors and gases therefrom; and
 - a first fluid-solid separator communicating with the first auger outlet, said first separator having a first outlet for vapors and gases and a second outlet for solids, wherein said first outlet communicates with the condenser and said second outlet communicates with the second, cooled auger.
33. (Canceled)
34. (Currently Amended) The apparatus of claim ~~32~~ 33, further comprising a second separator in communication with the first outlet, said second separator having a third outlet for oil and a fourth outlet for fuel-gas.
35. (Currently Amended) The apparatus of claim ~~32~~ 33, further comprising a system in communication with the first outlet and the heated vessel, said system configured to convey the gases to the heated vessel.
36. (Previously Presented) The apparatus of claim 34, further comprising a system in communication with the fourth outlet and the heated vessel, said system configured to convey the fuel-gas to the heated vessel.

37. (Previously Presented) The apparatus of claim 32, further comprising a water source communicating with the second, cooled auger providing cooling water for mixing with the carbon solids therein.

38. (Currently Amended) The apparatus of claim 32, wherein said condenser comprises:

carbon particulate separator communicating with the first, heated ~~auger reactor~~ outlet for receiving hydrocarbon vapors and gases with entrained particulate therefrom, said separator directing separated particulate back into the first, heated reactor;

vapor quenching system communicating with the carbon particulate separator to receive hydrocarbon vapors and gases therefrom and produce oil and gases; and

a further, second separator communicating with the vapor quenching system to receive said oil and gases to produce separated streams of oil, slop oil, oil-carbon slurry, and gas and LPG.

39. (Previously Presented) The apparatus of claim 38, wherein said condenser further comprises:

an additional, third, oil-water separator communicating said second separator to receive said slop oil stream to separate an oil stream and a water stream therefrom, with said oil stream being returned to said second separator;

a fourth, liquid-solid separator, communicating with said second separator to receive said oil-carbon slurry stream to separate further carbon solids therefrom to produce a further oil stream, said further oil stream being returned to said second separator;

a heat exchanger communicating with said second separator to receive the oil stream directly therefrom;

a condenser communicating with said second separator to receive said LPG and gas stream therefrom and separate the LPG from other gaseous components, said condenser further communicating with the fourth, liquid-solid separator to direct separated LPG thereto; and

a super heater communicating with the condenser to receive the other gaseous components therefrom to produce a fuel gas.

40. (Previously Presented) The apparatus of claim 21, further comprising a water source communicating with the first cooler, wherein said first cooler receives water from said water source and mixes the water with carbons solids accepted from the reactor.

41. (Previously Presented) The apparatus of claim 25, wherein said storage system comprises an additional heater to activate the carbons solids.